ABSTRACT OF THE DISCLOSURE

A method and apparatus are provided for calibrating a flow meter having an array of sensors arranged in relation to a pipe that measures a flow rate of a fluid flowing in the pipe. The method features the step of calibrating the flow rate using a calibration correction function based on one or more parameters that characterize either the array of sensors, the pipe, the fluid flowing in the pipe, or some combination thereof. The calibration correction function depends on either a ratio t/D of the pipe wall thickness (t) and the pipe inner diameter (D); a ratio t/λ of the pipe wall thickness (t) and the eddie wavelength (λ) of the fluid; a Reynolds number ($\rho UD/\mu$) that characterizes the fluid flow in the pipe; a ratio $\Delta x/D$ of the sensor spacing (Δx) and the pipe inner diameter (D); a ratio $f\Delta x/U_{meas}$ of usable frequencies in relation to the sensor spacing (Δx) and the raw flow rate (U_{meas}); or some combination thereof. The apparatus takes the form of a flow meter having a calibration correction function module performing the aforementioned functionality.